IB791

VIA CLE266 5.25” Embedded Board

USER’S MANUAL

Version 1.0

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Introduction

Product Description

IB791 is a high-performance flexible embedded board based on the VIA CLE 266 chipset. The chipset is based on an innovative and scaleable architecture with proven reliability. It is a two-chip set consisting of the VT8623 North Bridge Controller and VT8237 South Bridge Controller.

IB791 supports the Socket 370 processors with speeds of up to 1.4GHz and with front side bus of up to 133MHz. One 184-pin DDR DIMM sockets supports can accommodate a total memory size of 1GB.

Combining a fully integrated video processing feature set, Integrated UniChrome™ 2D/3D graphics engine and ultra efficient VIA DDR memory controller, the VIA Unichrome™ CLE266 Chipset is designed to enable high quality digital video streaming and DVD playback in a new generation of small form factor PCs and IA devices. Shared memory capacity is up to 64MB.

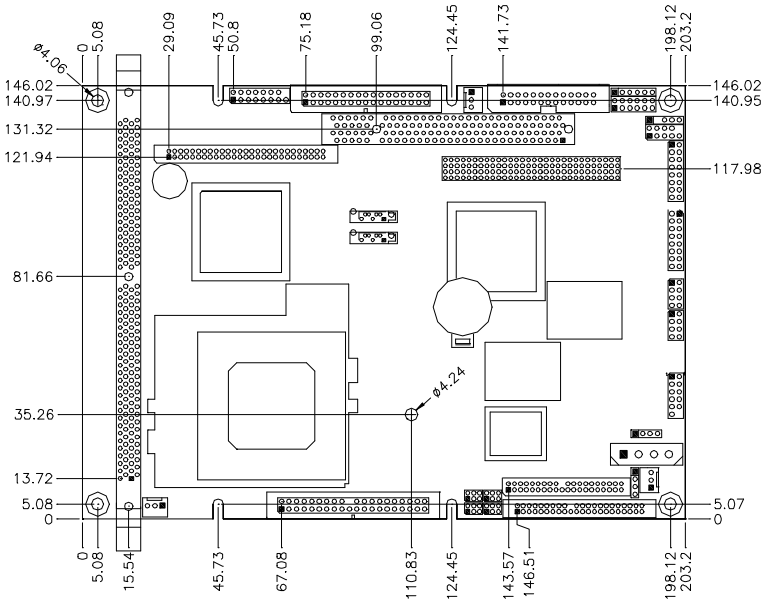
One 10/100Mbps Ethernet onboard is supported by the Realtek 8100C single chip Ethernet controller or it can replaced with an optional RTL8110s-32 Gigabit LAN.

With dimensions of 270mm by 160mm, IB791 has other features and connectors such CF card socket, PC/104 Plus and PCI connectors, two IDE channels, and four USB 1.1/2.0 compliant ports. Advanced features include digital I/O, watchdog timer and serial ATA support.

Specifications

Form Factor	Little Board
CPU Type	Socket 370 (Intel PIII / Celeron)
CPU Voltage	1.1V~1.85V
System Speed	533MHz~1.4GHz
CPU External Clock	66/100/133Mhz
Green /APM	APM1.2
CPU Socket	Socket 370
Chipset	VIA CLE266 North bridge: VT8623 (2D/3D) (CLE266)BGA 548 pin South bridge: VT8237 BGA 539 pin
BIOS	Award BIOS, 2Mbit, support ACPI function
Cache	CPU integrated
Memory	One 184-pin DDR DIMM socket supports, Supports DDR200/266 DIMM Max.1GB
VGA	VT8623 integrated AGP 4X VGA controller, share memory 16/32/64MB frame buffer
MPEG-2 Hardware	Slice layer, IDCT & Motion Compensation
LCD interface	Support 24Bit TTL LCD interface, LVDS interface for ID320
LAN Controller	Realtek RTL8100C (10/100Mb) or RTL8110s-32 Gigabit LAN
Sound	VT8237 built-in sound controller + AC97 Codec ALC655 (5.1 channels), (Line-out, Line-in, Mic)
PCI Slot	1 (support 2 bus master)
PC104+	1 (PCI only, 32-bit)
CF Card	Type II
LPC I/O	Winbond 83697HF: Parallel x1, COM1, COM2, FDC 2.88MB (3 Mode support), Hardware monitor (2 thermal inputs, 8 voltage monitor inputs, VID0-4, 1 chassis open detection, 2 fan headers)
Secondary LPC I/O	Winbond 83697HF support COM3, COM4
Uart/16550A(6 Port)	COM1/3/4:RS232 COM2: RS232/422/485
RTC/CMOS	VT8237 built-in
Battery	Lithium battery
Keyboard / Mouse	VT8237 built-in
Parallel IDE	VT8237 built-in, IDE1, 2 (Ultra DMA 33/66/100/133)
Serial ATA	Dual Channel Serial ATA, support RAID 0, 1, JBOD
USB	Supports 1.1/2.0 USB 4 ports
Digital I/O	4 In/Out (TTL level)
Watchdog Timer	256 levels
Dimensions	203mm X146mm

Board Dimensions



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Installations

This section provides information on how to use the jumpers and connectors on the IB791 in order to set up a workable system. The topics covered are:

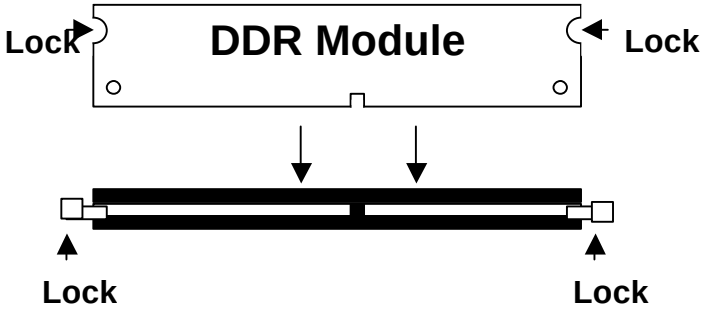
Installing the Memory (DDR DIMM)

The IB791 board supports one 184-pin DDR DIMM socket for a maximum total memory of 1GB in DDR DRAM type. The memory module capacities supported are 64MB, 128MB, 256MB, 512MB and 1GB.

Installing and Removing DIMMs

To install the DDR DIMM, locate the memory slot on the board and perform the following steps:

1. Hold the DIMM so that the two keys of the DIMM align with those on the memory slot.
2. Gently push the DIMM in an upright position until the clips of the slot close to hold the DIMM in place when the DIMM touches the bottom of the slot.
3. To remove the DDR module, press the clips with both hands.

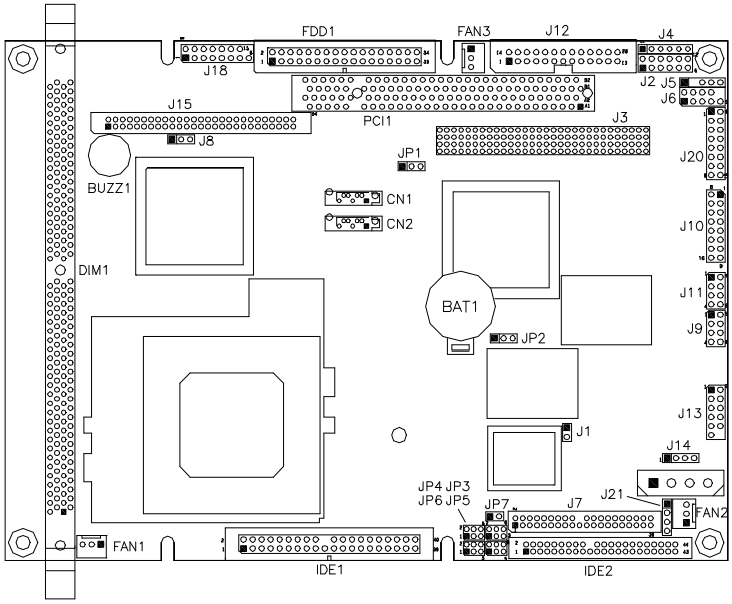


Top View of DIMM Socket

Setting the Jumpers

Jumpers are used on IB791 to select various settings and features according to your needs and applications. Contact your supplier if you have doubts about the best configuration for your needs. The following lists the connectors on IB791 and their respective functions.

Jumper Locations on IB791



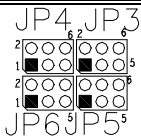
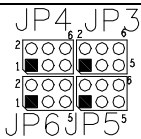
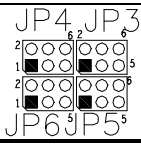
JP1: AT / ATX Power Select

JP1	Setting	Power Supply
	Pin 1-2 Short/Closed	AT
	Pin 2-3 Short/Closed	ATX

JP2: Clear CMOS Content

JP2	Setting	Function
	Pin 1-2 Short/Closed	Normal Operation
	Pin 2-3 Short/Closed	Clear CMOS Content

JP4, JP5, JP6: RS232/RS422/RS485 (COM2) Selection

JP4, JP5, JP6	Pin Short	Function
	JP4: 1-2 JP5: 3-5, 4-6 JP6: 3-5, 4-6	RS232
	JP4: 3-4 JP5: 1-3, 2-4 JP6: 1-3, 2-4	RS422
	JP4: 5-6 JP5: 1-3, 2-4 JP6: 1-3, 2-4	RS485

JP3: COM3/4 RS232 +5V / +12V Power Setting

Pin #	Signal Name	JP3	Signal Name	Pin #
1	+5V		+5V	2
3	Pin 9 (COM1)		Pin 9 (COM2)	4
5	+12V		+12V	6

COM3Settings: Pin 1-3 short = +5V, Pin 3-5 short = +12V
COM4 Settings: Pin 2-4 short = +5V, Pin 4-6 short = +12V

JP7: CF Connector Slave/Master Selection

JP7	Setting	Setting
	Open	Slave
	Short/Closed	Master

JP8: LCD Panel Power Selection

JP8	Setting	Voltage
	Pin 1-2 Short/Closed	3.3V
	Pin 2-3 Short/Closed	5V

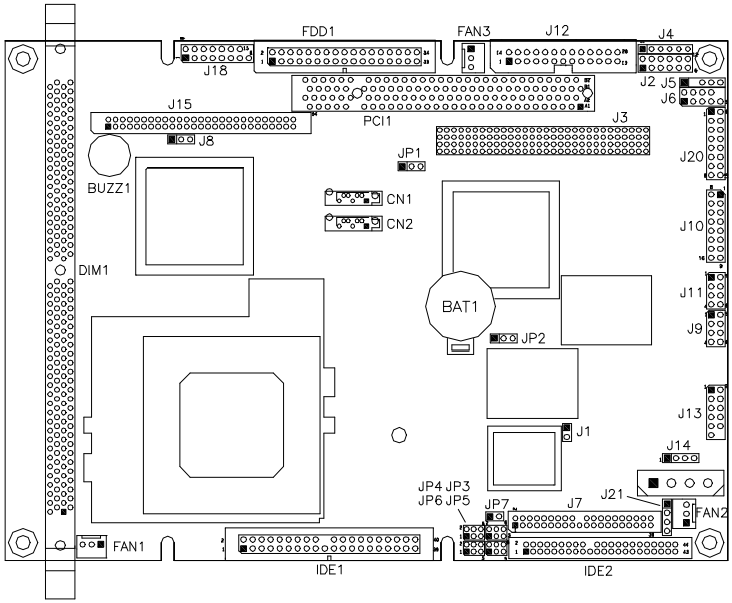
JP1 on ID320: LCD Panel Power Selection

JP1	Setting	Power
	Pin 1-2 Short/Closed	3.3V
	Pin 2-3 Short/Closed	5V

Connectors on IB791

The connectors on IB791 allows you to connect external devices such as keyboard, floppy disk drives, hard disk drives, printers, etc. The following table lists the connectors on IB791 and their respective functions.

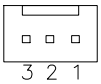
Connector Locations on IB791



CN1, CN2: Serial ATA (SATA) Connectors

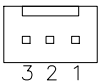
The SATA connectors support serial ATA 150. Each connector can only use one serial ATA hard disk. CN1 is port 1 and CN2 is port 2.

FAN1, FAN2: CPU and System Fan Power Connectors



Pin #	Signal Name
1	Ground
2	+12V
3	Rotation detection

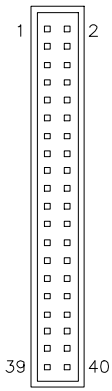
FAN3: ATX Power Connector



Pin #	Signal Name
1	Ground
2	PS_On
3	5VSB

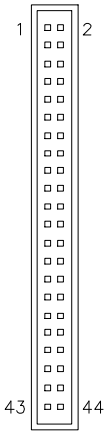
IDE1, IDE2: EIDE Connectors

IDE1: Primary IDE Connector



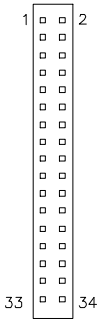
Signal Name	Pin #	Pin #	Signal Name
Reset IDE	1	2	Ground
Host data 7	3	4	Host data 8
Host data 6	5	6	Host data 9
Host data 5	7	8	Host data 10
Host data 4	9	10	Host data 11
Host data 3	11	12	Host data 12
Host data 2	13	14	Host data 13
Host data 1	15	16	Host data 14
Host data 0	17	18	Host data 15
Ground	19	20	Protect pin
DRQ0	21	22	Ground
Host IOW	23	24	Ground
Host IOR	25	26	Ground
IOCHRDY	27	28	Host ALE
DACK0	29	30	Ground
IRQ14	31	32	No connect
Address 1	33	34	No connect
Address 0	35	36	Address 2
Chip select 0	37	38	Chip select 1
Activity	39	40	Ground

IDE2: Secondary IDE Connector



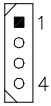
Signal Name	Pin #	Pin #	Signal Name
Reset IDE	1	2	Ground
Host data 7	3	4	Host data 8
Host data 6	5	6	Host data 9
Host data 5	7	8	Host data 10
Host data 4	9	10	Host data 11
Host data 3	11	12	Host data 12
Host data 2	13	14	Host data 13
Host data 1	15	16	Host data 14
Host data 0	17	18	Host data 15
Ground	19	20	Key
DRQ0	21	22	Ground
Host IOW	23	24	Ground
Host IOR	25	26	Ground
IOCHRDY	27	28	Host ALE
DACK0	29	30	Ground
IRQ14	31	32	No connect
Address 1	33	34	No connect
Address 0	35	36	Address 2
Chip select 0	37	38	Chip select 1
Activity	39	40	Ground
Vcc	41	42	Vcc
Ground	43	44	N.C.

FDD1: Floppy Drive Connector



Signal Name	Pin #	Pin #	Signal Name
5V/Ground	1	2	RM/LC
5V/Ground	3	4	No connect
5V/Ground	5	6	No connect
Ground	7	8	Index
Ground	9	10	Motor enable 0
Ground	11	12	Drive select 1
Ground	13	14	Drive select 0
Ground	15	16	Motor enable 1
Ground	17	18	Direction
Ground	19	20	Step
Ground	21	22	Write data
Ground	23	24	Write gate
Ground	25	26	Track 00
Ground	27	28	Write protect
Ground	29	30	Read data
Ground	31	32	Side 1 select
Ground	33	34	Diskette change

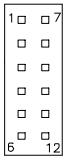
P2: AT Power Supply Connector



Pin #	Signal Name
1	+12V
2	Ground
3	Ground
4	+Vcc

J2: Digital I/O Connector (4 in, 4 out)

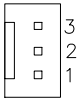
This 12-pin Digital I/O connector supports TTL levels and is used to control external devices requiring ON/OFF circuitry.



Signal Name	Pin #	Pin #	Signal Name
In0	1	7	+5V
In1	2	8	Out0
In2	3	9	Ground
In3	4	10	Out1
Ground	5	11	+12V
Out2	6	12	Out3

FAN2: System Fan Power Connector

FAN2 is a 3-pin header for the system fan. The fan must be a 12V fan.



Pin #	Signal Name
1	Ground
2	+12V
3	Rotation detection

CN3: Compact Flash Card Type II Connector

The onboard CF card connector, by default, shares the IDE2 slave channel. JP7, a 2-pin header, can be used to configure it as slave (pin open) or master (pin closed).

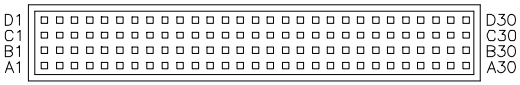
J3: PC/104 Plus Connector

PC/104-Plus Bus Signal Assignments

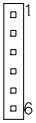
J3/P3				
Pin	**A**	**B**	**C**	**D**
1	GND/5.0V KEY²	Reserved	+5	AD00
2	VI/O	AD02	AD01	+5V
3	AD05	GND	AD04	AD03
4	C/BE0*	AD07	GND	AD06
5	GND	AD09	AD08	GND
6	AD11	VI/O	AD10	M66EN
7	AD14	AD13	GND	AD12
8	+3.3V	C/BE1*	AD15	+3.3V
9	SERR*	GND	SB0*	PAR
10	GND	PERR*	+3.3V	SDONE
11	STOP*	+3.3V	LOCK*	GND
12	+3.3V	TRDY*	GND	DEVSEL*
13	FRAME*	GND	IRDY*	+3.3V
14	GND	AD16	+3.3V	C/BE2*
15	AD18	+3.3V	AD17	GND
16	AD21	AD20	GND	AD19
17	+3.3V	AD23	AD22	+3.3V
18	IDSEL0	GND	IDSEL1	IDSEL2
19	AD24	C/BE3*	VI/O	IDSEL3
20	GND	AD26	AD25	GND
21	AD29	+5V	AD28	AD27
22	+5V	AD30	GND	AD31
23	REQ0*	GND	REQ1*	VI/O
24	GND	REQ2*	+5V	GNT0*
25	GNT1*	VI/O	GNT2*	GND
26	+5V	CLK0	GND	CLK1
27	CLK2	+5V	CLK3	GND
28	GND	INTD*	+5V	RST*
29	+12V	INTA*	INTB*	INTC*
30	-12V	Reserved	Reserved	GND/3.3V KEY²

* The shaded area denotes power or ground signals.

* The KEY pins are to guarantee proper module installation. Pin-A1 will be removed and the female side plugged for 5.0V I/O signals and Pin-D30 will be modified in the same manner for 3.3V I/O. It is recommended that both KEY pins (A1 and D30) be electrically connnected for GND for shielding.



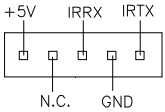
J4: PS/2 Keyboard Selection



Pin #	Signal Name
1	Vcc
2	To Pin 9 of J6
3	KB CLK
4	To Pin 8 of J6
5	KB Data
6	Ground

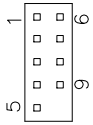
J5: IrDA Connector

J5 is used for an optional IrDA connector.



Pin #	Signal Name
1	+5V
2	No connect
3	Ir RX
4	Ground
5	Ir TX

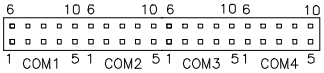
J6: PS/2 Keyboard and Mouse Connector



Signal Name	Pin #	Pin #	Signal Name
Ground	1	6	Ground
Vcc	2	7	Vcc
MS Data	3	8	KB Data
MS CLK	4	9	KB CLK
NC	5		

J7: Serial Ports

J7A (COM1), J4B (COM2), J4C (COM3) and J4D (COM4) are the onboard serial ports.



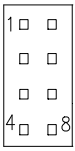
Pin #	Signal Name (RS-232)
1	DCD, Data carrier detect
2	RXD, Receive data
3	TXD, Transmit data
4	DTR, Data terminal ready
5	Ground
6	DSR, Data set ready
7	RTS, Request to send
8	CTS, Clear to send
9	RI, Ring indicator
10	No Connect.

COM2 is jumper selectable for RS-232, RS-422 and RS-485.

Pin #	Signal Name		
	RS-232	R2-422	RS-485
1	DCD	TX-	DATA-
2	RX	TX+	DATA+
3	TX	RX+	NC
4	DTR	RX-	NC
5	Ground	Ground	Ground
6	DSR	RTS-	NC
7	RTS	RTS+	NC
8	CTS	CTS+	NC
9	RI	CTS-	NC
10	NC	NC	NC

J9, J11: USB Connectors

These two USB headers supports a total of four USB ports (1.1/2.0).



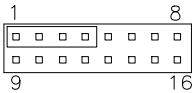
Pin #		Signal Name
1	5	Vcc
2	6	USB-
3	7	USB+
4	8	Ground

J10: System Function Connector

J10 provides connectors for system indicators that provide light indication of the computer activities and switches to change the computer status. J10 is a 16-pin header that provides interfaces for the following functions.

Speaker: Pins 1 - 4

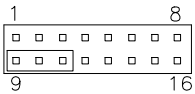
This connector provides an interface to a speaker for audio tone generation. An 8-ohm speaker is recommended.



Pin #	Signal Name
1	Speaker out
2	No connect
3	Ground
4	+5V

Power LED: Pins 9-11

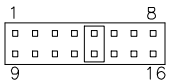
The power LED indicates the status of the main power switch.



Pin #	Signal Name
9	Power LED
10	NC
11	Ground

ATX Power ON Switch: Pins 5 and 13

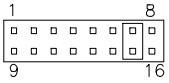
This 2-pin connector is an "ATX Power Supply On/Off Switch" on the system that connects to the power switch on the case. When pressed, the power switch will force the system to power on. When pressed again, it will force the system to power off.



Pin #	Signal Name
5	PS_ON
13	Ground

Reset Switch: Pins 7 and 15

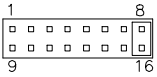
The reset switch allows the user to reset the system without turning the main power switch off and then on again.



Pin #	Signal Name
7	Reset#
15	Ground

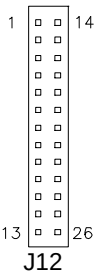
Hard Disk Drive LED Connector: Pins 8 and 16

This connector connects to the hard drive activity LED on control panel. This LED will flash when the HDD is being accessed.



Pin #	Signal Name
8	HDD Active
16	5V

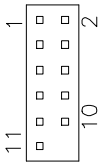
J12: Parallel Port Connector



Signal Name	Pin #	Pin #	Signal Name
Line printer strobe	1	14	AutoFeed
PD0, parallel data 0	2	15	Error
PD1, parallel data 1	3	16	Initialize
PD2, parallel data 2	4	17	Select
PD3, parallel data 3	5	18	Ground
PD4, parallel data 4	6	19	Ground
PD5, parallel data 5	7	20	Ground
PD6, parallel data 6	8	21	Ground
PD7, parallel data 7	9	22	Ground
ACK, acknowledge	10	23	Ground
Busy	11	24	Ground
Paper empty	12	25	Ground
Select	13	N/A	N/A

J13: External Audio Connector

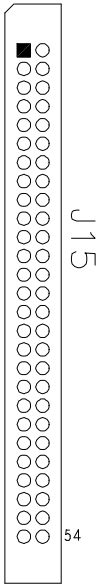
J13 is used to connect to an optional audio daughter cable card.



Signal Name	Pin #	Pin #	Signal Name
LINEOUT_R	1	2	LINEOUT_L
Ground	3	4	Ground
LINEIN_R	5	6	LINEIN L
Ground	7	8	Ground
Mic-In	9	10	VREFOUT
Ground	11		

J15: LCD Panel Connector

J15 is used with the ID320 daughter card that comes with the board.

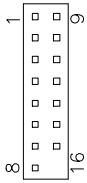


Signal Name	Pin #	Pin #	Signal Name
+12V	1	2	+12V
Ground	3	4	Ground
VDD	5	6	VDD
ENPVEE	7	8	Ground
FPD0	9	10	FPD1
FPD2	11	12	FPD3
FPD4	13	14	FPD5
FPD6	15	16	FPD7
FPD8	17	18	FPD9
FPD10	19	2-	FPD11
FPD12	21	22	FPD13
FPD14	23	24	FPD15
FPD16	25	26	FPD17
FPD18	27	28	FPD19
FPD20	29	30	FPD21
FPD22	31	32	FPD23
Ground	33	34	Ground
FP CLK	35	36	FP VS
FP DE	37	338	FP HS
Ground	39	40	FP BKLP
Ground	41	42	NC
ENPVDD	43	44	VDD
NC	45	46	NC
3.3V	47	48	3.3V
NC	49	50	NC
5V	51	52	SPD
5V	53	54	SPCLK

J14: CD-In Audio Connector

Pin #	Signal Name
1	CD Audio R
2	Ground
3	Ground
4	CD Audio L

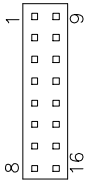
J18: VGA CRT Connector



Signal Name	Pin	Pin	Signal Name
R	1	9	+5V
G	2	10	GND
B	3	11	NC
NC	4	12	DDCDAT
GND	5	13	HSYNC
GND	6	14	VSYNC
GND	7	15	DDCCLK
GND	8	16	Protect pin

J20: Gigabit LAN Connector (used with ID330)

The pin assignments of the Gigabit LAN connector are as follows:

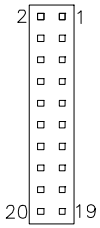


Signal Name	Pin	Pin	Signal Name
MDI0+	1	9	MDI0-
2.5V	2	10	GND
MDI1+	3	11	MDI1-
MDI2+	4	12	MDI2-
2.5V	5	13	2.5V
MDI3+	6	14	MDI3-
ACT_LED	7	15	LINK_UP
Link1000_LED	8	16	Link100_LED

J21: AT Power Supply Connector

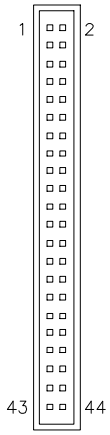
Pin #	Signal Name
1	Ground
2	-5V
3	Ground
4	-12V

J1 on ID320: LVDS Connector (18-bit)

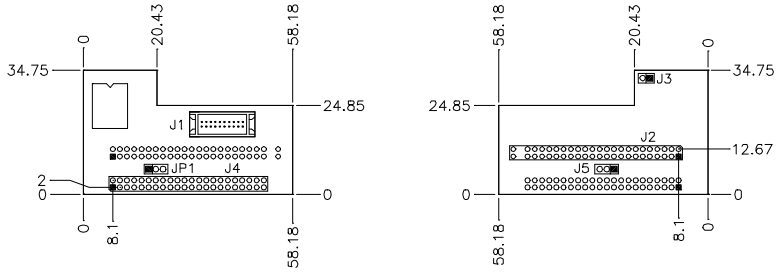


Signal Name	Pin #	Pin #	Signal Name
TX0-	2	1	TX0+
Ground	4	3	Ground
TX1-	6	5	TX1+
5V/3.3V	8	7	Ground
NC	10	9	NC
TX2-	12	11	TX2+
Ground	14	13	Ground
TXC-	16	15	TXC+
5V/3.3V	18	17	ENABKL
+12V	20	19	+12V

J4 on ID320: TTL Connector



Signal Name	Pin #	Pin #	Signal Name
+12V	1	2	+12V
Ground	3	4	Ground
VDD	5	6	VDD
ENPVEE	7	8	ENPVEE
FPD0	9	10	FPD1
FPD2	11	12	FPD3
FPD4	13	14	FPD5
FPD6	15	16	FPD7
FPD8	17	18	FPD9
FPD10	19	20	FPD11
FPD12	21	22	FPD13
FPD14	23	24	FPD15
FPD16	25	26	FPD17
FPD18	27	28	FPD19
FPD20	29	30	FPD21
FPD22	31	32	FPD23
Ground	33	34	Ground
FP_CLK	35	36	FP_VS
FP_DE	37	38	FP_HS
Ground	39	40	FP_BKLP
Ground	41	42	NC
ENPVDD	43	44	VDD



Dimensions of ID320

FPD RGB Mapping Table

	18Bit	24Bit
Pin	**RGB**	**RGB**
FPD0		B0
FPD1		B1
FPD2	B2	B2
FPD3	B3	B3
FPD4	B4	B4
FPD5	B5	B5
FPD6	B6	B6
FPD7	B7	B7
FPD8		G0
FPD9		G1
FPD10	G2	G2
FPD11	G3	G3
FPD12	G4	G4
FPD13	G5	G5
FPD14	G6	G6
FPD15	G7	G7
FPD16		R0
FPD17		R1
FPD18	R2	R2
FPD19	R3	R3
FPD20	R4	R4
FPD21	R5	R5
FPD22	R6	R6
FPD23	R7	R7

BIOS Setup

This chapter describes the different settings available in the Award BIOS that comes with the board. The topics covered in this chapter are as follows:

BIOS Introduction

The Award BIOS (Basic Input/Output System) installed in your computer system's ROM supports VIA C3 processors. The BIOS provides critical low-level support for a standard device such as disk drives, serial ports and parallel ports. It also adds virus and password protection as well as special support for detailed fine-tuning of the chipset controlling the entire system.

BIOS Setup

The Award BIOS provides a Setup utility program for specifying the system configurations and settings. The BIOS ROM of the system stores the Setup utility. When you turn on the computer, the Award BIOS is immediately activated. Pressing the <Del> key immediately allows you to enter the Setup utility. If you are a little bit late pressing the <Del> key, POST (Power On Self Test) will continue with its test routines, thus preventing you from invoking the Setup. If you still wish to enter Setup, restart the system by pressing the "Reset" button or simultaneously pressing the <Ctrl>, <Alt> and <Delete> keys. You can also restart by turning the system Off and back On again. The following message will appear on the screen:

```
Press <DEL> to Enter Setup
```

In general, you press the arrow keys to highlight items, <Enter> to select, the <PgUp> and <PgDn> keys to change entries, <F1> for help and <Esc> to quit.

When you enter the Setup utility, the Main Menu screen will appear on the screen. The Main Menu allows you to select from various setup functions and exit choices.

Phoenix - AwardBIOS CMOS Setup Utility

Standard CMOS Features	Frequency/Voltage Control
Advanced BIOS Features	Load Fail-Safe Defaults
Advanced Chipset Features	Load Optimized Defaults
Integrated Peripherals	Set Supervisor Password
Power Management Setup	Set User Password
PnP/PCI Configurations	Save & Exit Setup
PC Health Status	Exit Without Saving
ESC : Quit	↑ ↓ → ← : Select Item
F10 : Save & Exit Setup	
Time, Date, Hard Disk Type…	

The section below the setup items of the Main Menu displays the control keys for this menu. At the bottom of the Main Menu just below the control keys section, there is another section which displays information on the currently highlighted item in the list.

***Note**: If the system cannot boot after making and saving system changes with Setup, the Award BIOS supports an override to the CMOS settings that resets your system to its default.*

***Warning:** It is strongly recommended that you avoid making any changes to the chipset defaults. These defaults have been carefully chosen by both Award and your system manufacturer to provide the absolute maximum performance and reliability. Changing the defaults could cause the system to become unstable and crash in some cases.*

Standard CMOS Setup

"Standard CMOS Setup" choice allows you to record some basic hardware configurations in your computer system and set the system clock and error handling. If the board is already installed in a working system, you will not need to select this option. You will need to run the Standard CMOS option, however, if you change your system hardware configurations, the onboard battery fails, or the configuration stored in the CMOS memory was lost or damaged.

Phoenix - AwardBIOS CMOS Setup Utility
Standard CMOS Features

		Item Help
Date (mm:dd:yy)	Mon, Jul 12 2004	
Time (hh:mm:ss)	00 : 00 : 00	Menu Level
IDE Primary Master		Change the day, month,
IDE Primary Slave		Year and century
IDE Secondary Master		
IDE Secondary Slave		
Drive A	None	
Drive B	None	
Video	EGA/VGA	
Halt On	All, But Keyboard	
Base Memory	640K	
Extended Memory	129024K	
Total Memory	130048K	

At the bottom of the menu are the control keys for use on this menu. If you need any help in each item field, you can press the <F1> key. It will display the relevant information to help you. The memory display at the lower right-hand side of the menu is read-only. It will adjust automatically according to the memory changed. The following describes each item of this menu.

Date

The date format is:

Day : **Sun to Sat**
Month : **1 to 12**
Date : **1 to 31**
Year : **1994 to 2079**

To set the date, highlight the "Date" field and use the PageUp/ PageDown or +/- keys to set the current time.

Time

The time format is:

Hour	**:**	**00 to 23**
Minute	**:**	**00 to 59**
Second	**:**	**00 to 59**

To set the time, highlight the "Time" field and use the <PgUp>/ <PgDn> or +/- keys to set the current time.

IDE Primary HDDs / IDE Secondary HDDs

The onboard PCI IDE connectors provide Primary and Secondary channels for connecting up to four IDE hard disks or other IDE devices. Each channel can support up to two hard disks; the first is the "Master" and the second is the "Slave".

Press <Enter> to configure the hard disk. The selections include Auto, Manual, and None. Select 'Manual' to define the drive information manually. You will be asked to enter the following items.

CYLS :	Number of cylinders
HEAD :	Number of read/write heads
PRECOMP :	Write precompensation
LANDZ :	Landing zone
SECTOR :	Number of sectors

The Access Mode selections are as follows:

Auto	
Normal	(HD < 528MB)
Large	(for MS-DOS only)
LBA	(HD > 528MB and supports Logical Block Addressing)

Drive A / Drive B

These fields identify the types of floppy disk drive A or drive B that has been installed in the computer. The available specifications are:

360KB	1.2MB	720KB	1.44MB	2.88MB
5.25 in.	5.25 in.	3.5 in.	3.5 in.	3.5 in.

Video

This field selects the type of video display card installed in your system. You can choose the following video display cards:

EGA/VGA	For EGA, VGA, SEGA, SVGA or PGA monitor adapters. (default)
CGA 40	Power up in 40 column mode.
CGA 80	Power up in 80 column mode.
MONO	For Hercules or MDA adapters.

Halt On

This field determines whether or not the system will halt if an error is detected during power up.

No errors	The system boot will not be halted for any error that may be detected.
All errors	Whenever the BIOS detects a non-fatal error, the system will stop and you will be prompted.
All, But Keyboard	The system boot will not be halted for a keyboard error; it will stop for all other errors
All, But Diskette	The system boot will not be halted for a disk error; it will stop for all other errors.
All, But Disk/Key	The system boot will not be halted for a keyboard or disk error; it will stop for all others.

Advanced BIOS Features

This section allows you to configure and improve your system and allows you to set up some system features according to your preference.

Phoenix - AwardBIOS CMOS Setup Utility
Advanced BIOS Features

Virus Warning	Disabled	ITEM HELP
CPU Internal Cache	Enabled	Menu Level
External Cache	Enabled	
CPU L2 Cache ECC Checking	Enabled	Allows you choose the VIRUS warning feature for IDE Hard Disk boot sector protection. If this function is enabled and someone attempt to write data into this area, BIOS will show a warning message on screen and alarm beep
Processor Number Feature	Enabled	
Quick Power On Self Test	Enabled	
First Boot Device	Floppy	
Second Boot Device	HDD-0	
Third Boot Device	CDROM	
Boot Other Device	Enabled	
Swap Floppy Drive	Disabled	
Boot Up Floppy Seek	Disabled	
Boot Up Numlock Status	On	
Gate A20 Option	Fast	
Typematic Rate Setting	Disabled	
Typematic Rate (chars/Sec)	6	
Typematic Delay (Msec)	250	
Security Option	Setup	
OS Select For DRAM>64MB	Non-OS2	
Video BIOS Shadow	Enabled	
Small Logo (EPA) Show	Enabled	

Virus Warning

This item protects the boot sector and partition table of your hard disk against accidental modifications. If an attempt is made, the BIOS will halt the system and display a warning message. If this occurs, you can either allow the operation to continue or run an anti-virus program to locate and remove the problem.

CPU Internal Cache / External Cache

Cache memory is additional memory that is much faster than conventional DRAM (system memory). CPUs from 486-type on up contain internal cache memory, and most, but not all, modern PCs have additional (external) cache memory. When the CPU requests data, the system transfers the requested data from the main DRAM into cache memory, for even faster access by the CPU. These items allow you to enable (speed up memory access) or disable the cache function. By default, these items are ***Enabled***.

CPU L2 Cache ECC Checking
This field enables or disables the ECC (Error Correction Checking) checking of the CPU level-2 cache. The default setting is ***Enabled***.

Processor Number Feature
When enabled, this feature allows external systems to detect the processor number/type of the CPU.

Quick Power On Self Test
When enabled, this field speeds up the Power On Self Test (POST) after the system is turned on. If it is set to *Enabled*, BIOS will skip some items.

First/Second/Third Boot Device
These fields determine the drive that the system searches first for an operating system. The options available include *Floppy, LS120, HDD-0, SCSI, CDROM, HDD-1, HDD-2, HDD-3, ZIP100, USB-FDD, USB-CDROM, USB-HDD* and *Disable*.

Boot Other Device
These fields allow the system to search for an operating system from other devices other than the ones selected in the First/Second/Third Boot Device.

Swap Floppy Drive
This item allows you to determine whether or not to enable Swap Floppy Drive. When enabled, the BIOS swaps floppy drive assignments so that Drive A becomes Drive B, and Drive B becomes Drive A. By default, this field is set to ***Disabled.***

Boot Up Floppy Seek
When enabled, the BIOS will seek whether or not the floppy drive installed has 40 or 80 tracks. 360K type has 40 tracks while 760K, 1.2M and 1.44M all have 80 tracks.

Boot Up NumLock Status
This allows you to activate the NumLock function after you power up the system.

Gate A20 Option
This field allows you to select how Gate A20 is worked. Gate A20 is a device used to address memory above 1 MB.

Typematic Rate Setting

When disabled, continually holding down a key on your keyboard will generate only one instance. When enabled, you can set the two typematic controls listed next. By default, this field is set to ***Disabled.***

Typematic Rate (Chars/Sec)

When the typematic rate is enabled, the system registers repeated keystrokes speeds. Settings are from 6 to 30 characters per second.

Typematic Delay (Msec)

When the typematic rate is enabled, this item allows you to set the time interval for displaying the first and second characters. By default, this item is set to ***250msec.***

Security Option

This field allows you to limit access to the System and Setup. The default value is ***Setup***. When you select *System*, the system prompts for the User Password every time you boot up. When you select *Setup*, the system always boots up and prompts for the Supervisor Password only when the Setup utility is called up.

OS Select for DRAM > 64MB

This option allows the system to access greater than 64MB of DRAM memory when used with OS/2 that depends on certain BIOS calls to access memory. The default setting is ***Non-OS/2***.

Video BIOS Shadow

This item allows you to change the Video BIOS location from ROM to RAM. Video Shadow will increase the video speed.

Small Logo (EPA) Show

This field enables the showing of the EPA logo located at the upper right of the screen during boot up.

Advanced Chipset Features

This Setup menu controls the configuration of the chipset.

Phoenix - AwardBIOS CMOS Setup Utility
Advanced Chipset Features

DRAM Clock / Drive Control	Press Enter	ITEM HELP
AGP & P2P Bridge Control	Press Enter	Menu Level
CPU & PCI Bus Control	Press Enter	
Power-Supply Type	AT	
VGA Share Memory Size	32M	
Select Display Device	CRT+LCD	
Panel Type	800x 600.1Ch.18bit	

Phoenix - AwardBIOS CMOS Setup Utility
DRAM Clock/Driver Control

Current FSB Frequency	100MHz	ITEM HELP
Current DRAM Frequency	133MHz	Menu Level
DRAM Clock	By SPD	
DRAM Timing	By SPD	
DRAM CAS Latency	2.5	
Bank Interleave	Disabled	
Precharge to Active(Trp)	3T	
Active to Precharge(Tras)	6T	
Active to CMD(Trcd)	3T	
DRAM Command Rate	2T Command	

Phoenix - AwardBIOS CMOS Setup Utility
AGP & P2P Bridge Control

AGP Aperture Size	64M	ITEM HELP
AGP Driving Control	Auto	Menu Level
AGP Driving Value	DA	
AGP Fast Write	Disabled	
AGP Master 1 WS Write	Disabled	
AGP Master 1 WS Read	Disabled	

Phoenix - AwardBIOS CMOS Setup Utility
CPU & PCI Bus Control

CPU to PCI Write Buffer	Enabled	ITEM HELP
PCI Master 0 WS Write	Disabeld	Menu Level
PCI Delay Transaction	Disabled	

DRAM Clock / Drive Control

This field provides settings related to DRAM. The fields and their respective default settings include DRAM Clock (By SPD), DRAM Timing (By SPD), DRAM CAS Latency (2.5), Bank Interleave (Disabled), Precharge to Active (3T), Active to Precharge (6T), Active to CMD (3T) and DRAM Command Rate.

Current FSB Frequency

The default setting of the FSB Frequency is 100MHz.

Current DRAM Frequency

The default setting of the DRAM Frequency is 133MHz.

DRAM Clock

The default setting of the DRAM clock is SPD.

DRAM Timing
This option refers to the method by which the DRAM timing is selected. The default is By SPD.
DRAM CAS Latency
This is the period between when the chipset requests data from memory and when the memory is ready to send the data across the bus.
Bank Interleave
This decides how multiple memory modules communicate. It will only make a difference if you have more than one memory module.
Precharge to Active(Trp)
The amount of time from a bank precharge request to when it can be activated.
Active to Precharge(Tras)
The Active to Precharge timing controls the length of the delay between the activation and precharge commands – the length of time after activation can the access cycle be started again.
Active to CMD(Trcd)
This is the time between a row access request and a column access request.
DRAM Command Rate
This is the time to wait after a chip select before activate and read can be started.

AGP & P2P Bridge Control

The fields related to AGP & P2P Bridge Control and their respective default settings include AGP Aperture Size (64M), AGP Mode (2X), AGP Driving Control (Auto), AGP Driving Value (DA), AGP Fast Write (Disabled), AGP Master 1 WS Write (Disabled) and AGP Master 1 WS Read (Disabled).

AGP Aperture Size
The field sets aperture size of the graphics. The aperture is a portion of the PCI memory address range dedicated for graphics memory address space. Host cycles that hit the aperture range are forwarded to the AGP without any translation. The default setting is 64M.
AGP Driving Control
This is the period between when the chipset requests data from memory and when the memory is ready to send the data across the bus.
AGP Driving Value
This decides how multiple memory modules communicate. It will only make a difference if you have more than one memory module.
AGP Fast Write
This accelerates memory write transactions from the chipset to the AGP device.
AGP Master 1 WS Write
When enabled, this changes the default from a 2ws to a 1ws which will increase AGP Writing.

AGP Master 1 WS Read
By default, the AGP busmastering device waits for at least 2 wait states before it starts a write transaction. When enable, this option sets the delay to 1 wait state.

CPU & PCI Bus Control

The fields related to CPU & PCI Bus Control and their respective default settings include CPU to PCI Write Buffer (Enabled), PCI Master 0 WS Write (Enabled) and PCI Delay Transaction (Disabled).

CPU to PCI Write Buffer
This controls the CPU write buffer to the PCI bus.

PCI Master 0 WS Write
This determines whether the chipset inserts a delay before any writes from the PCI bus.

PCI Delay Transaction
This is used to meet the latency of PCI cycles to and from the ISA bus.

Power-Supply Type

The field selects the power supply type to AT or ATX that is used by the system. The default setting is ***AT***.

VGA Share Memory Size

The field sets memory size that can be shared as VGA memory. The default setting is ***32M***.

Select Display Device

The field selects the display device or devices that the system users. The default setting is CRT+LCD.

Panel Type

This field sets the panel type that is supported by the system. Below are the selections for the different panel types:

Panel Type
640x480, 1Ch, 18Bit
800x600, 1Ch, 18Bit
1024x768, 1Ch, 18Bit
1024x768, 1Ch, 24Bit

Note: Dithering Enable is for 18 bits panel and Disable is for 24 bits panel.

Integrated Peripherals

This section configures IDE and PCI devices and other peripherals.

Phoenix - AwardBIOS CMOS Setup Utility
Integrated Peripherals

VIA OnChip IDE Device	Press Enter	ITEM HELP
VIA OnChip PCI Device	Press Enter	Menu Level
SuperIO Device	Press Enter	
Init Display First	PCI Slot	

Phoenix - AwardBIOS CMOS Setup Utility
VIA OnChip IDE Device

OnChip SATA	Enabled	ITEM HELP
OnChip IDE Channel 0	Enabled	Menu Level
OnChip IDE Channel 1	Enabled	
IDE Prefetch Mode	Enabled	
Primary Master PIO	Auto	
Primary Slave PIO	Auto	
Secondary Master PIO	Auto	
Secondary Slave PIO	Auto	
Primary Master UDMA	Auto	
Primary Slave UDMA	Auto	
Secondary Master UDMA	Auto	
Secondary Slave UDMA	Auto	
IDE HDD Block Mode	Enabled	

Phoenix - AwardBIOS CMOS Setup Utility
VIA OnChip PCI Device

VIA-3058 AC97 Audio	Auto	ITEM HELP
OnChip USB Controller	Enabled	Menu Level
OnChip EHCI Controller	Enabled	
USB Keyboard Support	Disabled	

Phoenix - AwardBIOS CMOS Setup Utility
SuperIO Device

Onboard FDD Controller	Enabled	ITEM HELP
Onboard Serial Port 1	3F8/IRQ4	Menu Level
Onboard Serial Port 2	2F8/IRQ3	
UART Mode Select	Normal	
RxD, TxD Active	Hi, Lo	
IR Transmission Delay	Enabled	
UR2 Duplex Mode	Half	
Use IR Pins	IR-Rx2Tx2	
Onboard Parallel Port	378/IRQ7	
Onboard Parallel Mode	SPP	
EPP Mode Select	EPP1.7	
ECP Mode Use DMA	3	
Onboard Serial Port 3	3E8	
Serial Port 3 Use IRQ	IRQ5	
Onboard Serial Port 4	2E8	
Serial Port 4 Use IRQ	IRQ10	

VIA OnChip IDE Device
OnChip SATA

The integrated peripheral controller contains an SATA interface with support for two SATA channels. Select *Enabled* to activate each channel separately.

OnChip IDE Channel 0 / 1

The integrated peripheral controller contains an IDE interface with support for two IDE channels. Select *Enabled* to activate each channel separately.

IDE Prefetch Mode

These field enables/disables the prefetch buffers in the PCI IDE controller. The prefetch buffers are used as a temporary storage place as data is transferred from one location to another.

IDE Primary/Secondary Master/Slave PIO

These fields allow your system hard disk controller to work faster. Rather than have the BIOS issue a series of commands that transfer to or from the disk drive, PIO (Programmed Input/Output) allows the BIOS to communicate with the controller and CPU directly. The system supports five modes, numbered from 0 (default) to 4, which primarily differ in timing. When Auto is selected, the BIOS will select the best available mode.

IDE Primary/Secondary Master/Slave UDMA

These fields allow your system to improve disk I/O throughput to 33Mb/sec with the Ultra DMA/33 feature. The options are *Auto* and *Disabled*.

IDE HDD Block Mode

This field allows your hard disk controller to use the fast block mode to transfer data to and from your hard disk drive.

VIA OnChip PCI Device
VIA-3058 AC97 Audio

By default, the audio controller is enabled.

OnChip USB Controller

By default, the USB controller is enabled for all devices. However, the USB devices, keyboard and USB mouse support options must be enabled separately for them to function.

OnChip EHCI Controller
By default, the EHCI (Enhanced Host Controller Interface) Controller is enabled.

Keyboard Support
By default, the EHCI (Enhanced Host Controller Interface) Controller is enabled.

SuperIO Device
Onboard FDD Controller
Select *Enabled* if your system has a floppy disk controller installed on the board and you wish to use it. If you install an add-in FDC or the system has no floppy drive, select Disabled in this field. This option allows you to select the onboard FDD port.

Onboard Serial/Parallel Port
These fields allow you to select the onboard serial and parallel ports and their addresses.

UART 2 Mode
UART Mode Select enables you to select the in-frared communication protocol.

Parallel Port Mode
This field allows you to determine parallel port mode function.

SPP	Standard Printer Port
EPP	Enhanced Parallel Port
ECP	Extended Capabilities Port

Init Display First
This field allows the system to initialize first the VGA card on chip or the display on the PCI Slot. By default, the *PCI Slot* VGA is initialized first.

Power Management Setup

The Power Management Setup allows you to save energy of your system effectively.

Phoenix - AwardBIOS CMOS Setup Utility
Power Management Setup

ACPI Function	Enabled	ITEM HELP
Power Management	User Define	Menu Level
HDD Power Down	Disabled	
Suspend Mode	Disabled	
Video Off Option	Suspend -> Off	
Video Off Method	V/H Sync + Blank	
Modem Use IRQ	3	
Soft-Off by PWRBTN	Instant-Off	
Ac Loss Auto Restart	Off	
IRQ/Event Activity	Press Enter	

Phoenix - AwardBIOS CMOS Setup Utility
IRQ/Event Activity Detect

VGA	OFF	ITEM HELP
LPT & COM	LPT/COM	Menu Level
HDD & FDD	ON	
PCI Master	OFF	
PowerOn by PCI Card	Disabled	
Modem Ring Resume	Disabled	
RTC Alarm Resume	Disabled	
IRQs Activity Monitoring	Press Enter	

Phoenix - AwardBIOS CMOS Setup Utility
IRQs Activity Monitoring

Primary INTR	ON	ITEM HELP
IRQ3 (COM2)	Enabled	Menu Level
IRQ4 (COM1)	Enabled	
IRQ5 (LPT 2)	Enabled	
IRQ6 (Floppy Disk)	Enabled	
IRQ7 (LPT 1)	Enabled	
IRQ8 (RTC Alarm)	Disabled	
IRQ9 (IRQ2 Redir)	Disabled	
IRQ10 (Rserved)	Disabled	
IRQ11 (Reserved)	Disabled	
IRQ12 (PS/2 Mouse)	Enabled	
IRQ13 (Coprocessor)	Enabled	
IRQ14 (Hard Disk)	Enabled	
IRQ15 (Reserved)	Disabled	

ACPI Function
By default, the ACPI function is enabled.

Power Management
This field allows you to select the type of power saving management modes. There are four selections for Power Management.

Min. Power Saving	Minimum power management
Max. Power Saving	Maximum power management.
User Define	Each of the ranges is from 1 min. to 1hr.
(Default)	Except for HDD Power Down which ranges from 1 min. to 15 min.

Under this option, you can also configure other features such HDD Power Down, Doze Mode and Suspend Mode.

HDD Power Down
After the selected period of drive inactivity, the hard disk drive powers down while all other devices remain active. Control of this mode is independent of the Power Management mode selected previously.

Suspend Mode
This option decides when to shutdown video for power saving. You can select it as always on or turn off video when system enters suspend mode.

Video Off Option
This option decides when to shutdown video for power saving. You can select it as always on or turn off video when system enters suspend mode.

Video Off Method
This field defines the Video Off features. There are three options.

V/H SYNC + Blank	Default setting, blank the screen and turn off vertical and horizontal scanning.
DPMS	Allows the BIOS to control the video display card if it supports the DPMS feature.
Blank Screen	This option only writes blanks to the video buffer.

Modem Use IRQ
This field sets the IRQ used by the Modem. By default, the setting is ***3***.

Soft-Off by PWRBTN
This field defines the power-off mode when using an ATX power supply. The *Instant Off* mode allows powering off immediately upon pressing the power button. In the *Delay 4 Sec* mode, the system powers off when the power button is pressed for more than four seconds or enters the suspend mode when pressed for less than 4 seconds. The default value is ***Instant Off***.

AC Loss Auto Restart
This field sets the auto restarting function of the system when there is AC power loss.

IRQ/Event Activity Detect
The items under this field are I/O events that can prevent the system from entering a power saving mode or can awaken the system from such a mode. When an I/O device wants to gain the attention of the operating system, it signals this by causing an IRQ to occur. When the operating system is ready to respond to the request, it interrupts itself and performs the service.

PNP/PCI Configurations

This option configures the PCI bus system. All PCI bus systems on the system use INT#, thus all installed PCI cards must be set to this value.

Phoenix - AwardBIOS CMOS Setup Utility
PnP/PCI Configurations

		ITEM HELP
PNP OS Install	No	Menu Level
Reset Configuration Data	Disabled	
Resources Controlled By	Auto(ESCD)	Default is Disabled. Select Enabled to reset Extended System Configuration Data (ESCD) when you exit Setup if you have installed a new add-on and the system reconfiguration has caused such a serious conflict that the OS cannot boot
IRQ Resources	Press Enter	
DMA Resources	Press Enter	
PCI/VGA Palette Snoop	Disabled	
Assign IRQ for VGA	Enabled	

PNP OS Install

Enable the PNP OS Install option if it is supported by the operating system installed. The default value is ***No***.

Reset Configuration Data

This field allows you to determine whether to reset the configuration data or not. The default value is ***Disabled.***

Resources Controlled by

This PnP BIOS can configure all of the boot and compatible devices automatically with the use of a use a PnP operating system such as Windows 95.

PCI/VGA Palette Snoop

Some non-standard VGA display cards may not show colors properly. This field allows you to set whether or not MPEG ISA/VESA VGA cards can work with PCI/VGA. When this field is enabled, a PCI/VGA can work with an MPEG ISA/VESA VGA card. When this field is disabled, a PCI/VGA cannot work with an MPEG ISA/VESA card.

Assign IRQ for VGA/USB

By default, this fields are Enabled.

PC Health Status

This section shows the parameters in determining the PC Health Status. These parameters include temperatures, fan speeds and voltages.

Phoenix - AwardBIOS CMOS Setup Utility
PC Health Status

		ITEM HELP
CPU Warning Temperature	Disabled	Menu Level
System Temp.		
CPU Temp.		
CPU FAN Speed(FAN1)		
System FAN Speed(FAN2)		
Vcore(V)		
+3.3V		
+5V		
+12V		
VBAT (V)		
5VSB (V)		
Shutdown Temperature	Disabled	
CPU Fan Failure Warning	Disabled	
Sys. Fan Failure Warning	Disabled	

CPU Warning Temperature

This field sets the temperature threshold that when it is reached, the system would give an audible warning.

Temperatures/Fan Speeds/Voltages

These fields are the parameters of the hardware monitoring function feature of the board. The values are read-only values as monitored by the system and show the PC health status.

Shutdown Temperature

This field sets the temperature threshold that, when it is reached, the system shuts down automatically.

CPU and System Fan Failure Warning

These fields enable or disable the warning function that will sound when the relevant fan fails.

Frequency/Voltage Control

This section shows the user how to configure the processor frequency.

Phoenix - AwardBIOS CMOS Setup Utility
Frequency/Voltage Control

Auto Detect DIMM/PCI Clk	Disabled	ITEM HELP
Spread Spectrum	Disabled	Menu Level

Auto Detect DIMM/PCI Clk

This field enables or disables the auto detection of the DIMM/PCI clock. The default setting is ***Disabled***.

Spread Spectrum

This field sets the value of the spread spectrum. The default setting is ***Disabled***. This field is for CE testing use only.

Load Fail-Safe Defaults

This option allows you to load the troubleshooting default values permanently stored in the BIOS ROM. These default settings are non-optimal and disable all high-performance features.

Load Setup Defaults

This option allows you to load the default values to your system configuration. These default settings are optimal and enable all high performance features.

Set Supervisor/User Password

These two options set the system password. Supervisor Password sets a password that will be used to protect the system and Setup utility. User Password sets a password that will be used exclusively on the system. To specify a password, highlight the type you want and press <Enter>. The Enter Password: message prompts on the screen. Type the password, up to eight characters in length, and press <Enter>. The system confirms your password by asking you to type it again. After setting a password, the screen automatically returns to the main screen.

To disable a password, just press the <Enter> key when you are prompted to enter the password. A message will confirm the password to be disabled. Once the password is disabled, the system will boot and you can enter Setup freely.

Save & Exit Setup

This option allows you to determine whether or not to accept the modifications. If you type "Y", you will quit the setup utility and save all changes into the CMOS memory. If you type "N", you will return to Setup utility.

Exit Without Saving

Select this option to exit the Setup utility without saving the changes you have made in this session. Typing "Y" will quit the Setup utility without saving the modifications. Typing "N" will return you to Setup utility.

Drivers Installation

This section describes the installation procedures for software and drivers under the Windows 98SE, Windows ME, Windows XP and Windows 2000.

The CD disc that comes with the IB791 embedded board allows you to install drivers for the following items:

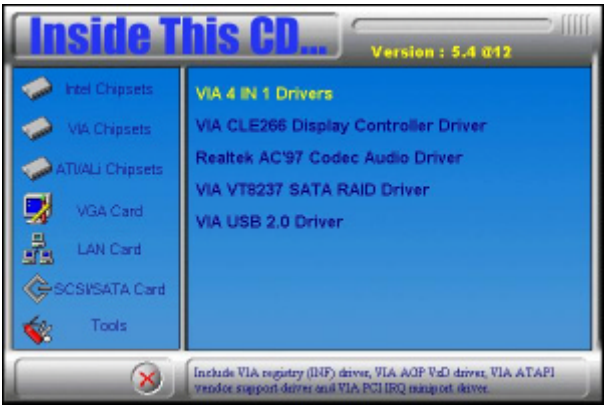
- VIA 4 IN 1 Drivers
- VIA CLE266 Display Controller Chipset Driver
- Realtek AC'97 Codec Audio Driver
- VIA VT8237 SATA RAID Driver
- VIA USB 2.0 Driver
- Realtek Network Interface Controller Drivers

IMPORTANT Note：
Please update your system with Windows 2000 SP4 or Windows XP SP1 and then install the above drivers.

VIA 4in1 Drivers Installation

The VIA 4in1 Driver, to be installed first before the software drivers, will enable Plug & Play INF support for VIA chipset components. Follow the instructions below to complete the installation under Windows 98SE/ME/2000/XP.

1. Insert the CD that comes with the motherboard and the screen below would appear. Click **VIA Chipsets➔VIA CLE266 Chipset Driver➔CLE266+VT8237 Chipset Drivers➔VIA 4 IN 1 Drivers**.



2. When the welcome screen appears, click **Next** to continue.

3. Click **Yes** to agree with the license agreement and README and to continue.

4. Select Normal Installation (in the 4in1 Setup Mode Option screen) and click **Next** to continue.

5. Click on all checkboxes and click **Next** to continue. This will install the following:

- VIA PCI IDE Bus Driver
- AGP Driver (AGP3.0 Supported)
- VIA INF Driver 1.80a

6. Click on “Install VIA PCI IDE Bus Driver” to install it and click **Next** to continue.

7. Click on “Install AGP driver” to install the driver and click **Next** to continue.

8. Click **OK** to restart the computer when prompted.

VIA CLE266 VGA Driver Installation

Follow the steps below to install the VIA CLE266 VGA Drivers.

1. Insert the CD that comes with the motherboard. On the initial screen, do the following. Click **VIA Chipsets➔VIA CLE266 Chipset Driver➔CLE266+VT8237 Chipset Drivers➔VIA CLE266 Display Controller Driver**.

2. When the welcome screen appears, click **Next** to continue.

3. Click **Next** to continue. This step will run the VIA/S3G CLE266 Display Driver Installer.

4. When the screen "Digital Signature Not Found" appears, click **Yes** to continue the installation.

5. Click **Finish** to restart the computer.

Realtek AC97 Codec Audio Driver Installation

Follow the steps below to install the Realtek AC97 Codec Audio Drivers.

1. Insert the CD that comes with the motherboard and on the initial screen, click **VIA Chipsets➔VIA CLE266 Chipset Driver➔CLE266+VT8237 Chipset Drivers➔Realtek AC'97 Codec Audio Driver**.

2. Click **Yes** to continue.

3. Click **Finish** to restart the computer.

VIA VT8237 SATA RAID Driver Installation

Follow the steps below to install the VIA VT8237 RAID SATA Drivers.

1. Insert the CD that comes with the motherboard and on the initial screen, click **VIA Chipsets→VIA CLE266 Chipset Driver→CLE266+VT8237 Chipset Drivers→VIA VT8237 RAID SATA Driver**.

2. When the welcome screen appears, click **Next** to continue. And in the License Agreement screen, click **I Agree** and then click **Next** to continue.

3. In the *Install List* scrren, click **Next** to continue. This should install the VIA VT64xx series RAID driver 3.00 and VIA RAID Config Utility 2.40.

4. In the *Installing Components List* scrren, click **Next** to continue. If you want to review or change any settings, click **Back**. If you are satisfied with the settings, click **Next** to begin installing components.

5. In the *Installing Status* screen, it shows you the information to tell you whether or not the components is installed successfully. Click **Next** to continue.

6. Click **Finish** to restart the computer when prompted.

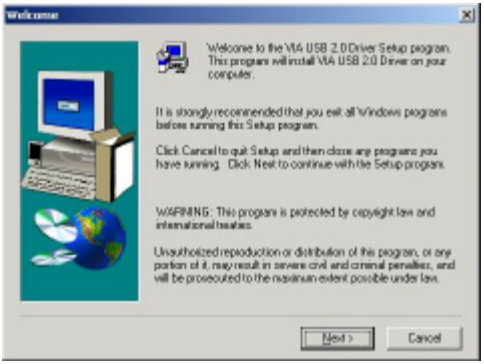
VIA USB 2.0 Drivers Installation

Follow the steps below to install the VIA USB 2.0 Drivers.

Note：Please update your system to Windows 2000 SP4 or Windows XP SP1, and then install the USB 2.0 drivers.

1. Insert the CD that comes with the motherboard and on the initial screen, click **VIA Chipsets➔VIA CLE266 Chipset Driver➔CLE266+VT8237 Chipset Drivers➔VIA USB 2.0 Driver**.

2. In the welcome screen, click **Next** to continue.



3. Check on the ‘Install USB 2.0 Driver’ checkbox and click **Next** to continue.

4. Restart the computer when prompted.

Realtek Network Interface Controller Drivers Installation

Follow the steps below to install the Realtek Network Interface Controller Drivers.

1. Insert the CD that comes with the motherboard and on the initial screen click **LAN Card➔Realtek Network Interface Controller Drivers**

2. When the welcome screen appears, click **Next** to continue.

3. On the next screen, click **Finish** to restart the computer.

Appendix

A. I/O Port Address Map

Each peripheral device in the system is assigned a set of I/O port addresses, which also becomes the identity of the device. The following table lists the I/O port addresses used.

Address	Device Description
000h - 01Fh	DMA Controller #1
020h - 03Fh	Interrupt Controller #1
040h - 05Fh	Timer
060h - 06Fh	Keyboard Controller
070h - 07Fh	Real Time Clock, NMI
080h - 09Fh	DMA Page Register
0A0h - 0BFh	Interrupt Controller #2
0C0h - 0DFh	DMA Controller #2
0F0h	Clear Math Coprocessor Busy Signal
0F1h	Reset Math Coprocessor
1F0h - 1F7h	IDE Interface
278 - 27F	Parallel Port #2(LPT2)
2F8h - 2FFh	Serial Port #2(COM2)
2B0 - 2DF	Graphics adapter Controller
378h - 3FFh	Parallel Port #1(LPT1)
360 - 36F	Network Ports
3B0 - 3BF	Monochrome & Printer adapter
3C0 - 3CF	EGA adapter
3D0 - 3DF	CGA adapter
3F0h - 3F7h	Floppy Disk Controller
3F8h - 3FFh	Serial Port #1(COM1)

B. Interrupt Request Lines (IRQ)

Peripheral devices uses interrupt request lines to notify CPU for the service required. The following table shows the IRQ used by the devices on board.

Level	Function
IRQ0	System Timer Output
IRQ1	Keyboard
IRQ2	Interrupt Cascade
IRQ3	Serial Port #2
IRQ4	Serial Port #1
IRQ5	Reserved
IRQ6	Floppy Disk Controller
IRQ7	Parallel Port #1
IRQ8	Real Time Clock
IRQ9	Reserved
IRQ10	Serial Port 3
IRQ11	Serial Port 4
IRQ12	PS/2 Mouse
IRQ13	80287
IRQ14	Primary IDE
IRQ15	Secondary IDE

C. Watchdog Timer Configuration

The WDT is used to generate a variety of output signals after a user programmable count. The WDT is suitable for use in the prevention of system lock-up, such as when software becomes trapped in a deadlock. Under these sort of circumstances, the timer will count to zero and the selected outputs will be driven. Under normal circumstance, the user will restart the WDT at regular intervals before the timer counts to zero.

SAMPLE CODE:
This code and information is provided "as is" without warranty of any kind, either expressed or implied, including but not limited to the implied warranties of merchantability and/or fitness for a particular purpose.

Filename：Main.cpp

```
//=============================================================================
//
// THIS CODE AND INFORMATION IS PROVIDED "AS IS" WITHOUT WARRANTY OF ANY
// KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE
// IMPLIED WARRANTIES OF MERCHANTABILITY AND/OR FITNESS FOR A PARTICULAR
// PURPOSE.
//
//=============================================================================
#include <stdio.h>
#include <stdlib.h>
#include "W697HF.H"
//=============================================================================
int main (int argc, char *argv[]);
void copyright(void);
void EnableWDT(int);
void DisableWDT(void);
//=============================================================================
int main (int argc, char *argv[])
{
	unsigned char bBuf;
	unsigned char bTime;
	char **endptr;

	copyright();

	if (argc != 2)
	{
		printf(" Parameter incorrect!!\n");
		return 1;
	}

	if (Init_W697HF() == 0)
	{
		printf(" Winbond 83697HF is not detected, program abort.\n");
		return 1;
	}
	bTime = strtol (argv[1], endptr, 10);
	printf("System will reset after %d seconds\n", bTime);

	EnableWDT(bTime);

	return 0;
}
//=============================================================================
void copyright(void)
{
	printf("\n======== Winbond 697HF Watch Timer Tester (AUTO DETECT) ========\n"\
	       "        Usage : W697WD reset_time\n"\
	       "        Ex : W697WD 3  => reset system after 3 second\n"\
	       "             W697WD 0  => disable watch dog timer\n");
}
//=============================================================================
void EnableWDT(int interval)
```

```
{
        unsigned char bBuf;

        bBuf = Get_W697HF_Reg(0x29);
        bBuf &= (~0x60);
        bBuf |= 0x20;
        Set_W697HF_Reg(0x29, bBuf);                             //enable WDTO

        Set_W697HF_LD(0x08);                                    //switch to logic device 8

        bBuf = Get_W697HF_Reg(0xF3);
        bBuf &= (~0x04);
        Set_W697HF_Reg( 0xF3, bBuf);                    //count mode is second

        Set_W697HF_Reg( 0xF4, interval);                //set timer
        Set_W697HF_Reg( 0x30, 0x01);                    //enable timer
}
//=====================================================================
void DisableWDT(void)
{
        Set_W697HF_LD(0x08);                                    //switch to logic device 8
        Set_W697HF_Reg(0x30, 0x00);                     //watchdog disabled
        Set_W697HF_Reg(0xF4, 0x00);                     //clear watchdog timer
}
//=====================================================================
```

Filename：W697hf.cpp

```
//=====================================================================
//
// THIS CODE AND INFORMATION IS PROVIDED "AS IS" WITHOUT WARRANTY OF ANY
// KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE
// IMPLIED WARRANTIES OF MERCHANTABILITY AND/OR FITNESS FOR A PARTICULAR
// PURPOSE.
//
//=====================================================================
#include "W697HF.H"
#include <dos.h>
//=====================================================================
unsigned int W697HF_BASE;
void Unlock_W697HF (void);
void Lock_W697HF (void);
//=====================================================================
unsigned int Init_W697HF(void)
{
        unsigned int result;
        unsigned char ucDid;

        W697HF_BASE = 0x2E;
        result = W697HF_BASE;

        ucDid = Get_W697HF_Reg(0x20);
        if ( ucDid == 0x60)
        {       goto Init_Finish;    }

        W697HF_BASE = 0x4E;
        result = W697HF_BASE;

        ucDid = Get_W697HF_Reg(0x20);
        if ( ucDid == 0x60)
        {       goto Init_Finish;    }

        W697HF_BASE = 0x00;
        result = W697HF_BASE;

Init_Finish:
        return (result);
}
//=====================================================================
void Unlock_W697HF (void)
{
        outportb(W697HF_INDEX_PORT, W697HF_UNLOCK);
        outportb(W697HF_INDEX_PORT, W697HF_UNLOCK);
}
//=====================================================================
```

```
void Lock_W697HF (void)
{
        outportb(W697HF_INDEX_PORT, W697HF_LOCK);
}
//============================================================================
void Set_W697HF_LD( unsigned char LD)
{
        Unlock_W697HF();
        outportb(W697HF_INDEX_PORT, W697HF_REG_LD);
        outportb(W697HF_DATA_PORT, LD);
        Lock_W697HF();
}
//============================================================================
void Set_W697HF_Reg( unsigned char REG, unsigned char DATA)
{
        Unlock_W697HF();
        outportb(W697HF_INDEX_PORT, REG);
        outportb(W697HF_DATA_PORT, DATA);
        Lock_W697HF();
}
//============================================================================
unsigned char Get_W697HF_Reg(unsigned char REG)
{
        unsigned char Result;
        Unlock_W697HF();
        outportb(W697HF_INDEX_PORT, REG);
        Result = inportb(W697HF_DATA_PORT);
        Lock_W697HF();
        return Result;
}
//============================================================================
```

Filename：W697hf.h

```
//============================================================================
//
// THIS CODE AND INFORMATION IS PROVIDED "AS IS" WITHOUT WARRANTY OF ANY
// KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE
// IMPLIED WARRANTIES OF MERCHANTABILITY AND/OR FITNESS FOR A PARTICULAR
// PURPOSE.
//
//============================================================================
#ifndef __W697HF_H
#define __W697HF_H                      1
//============================================================================
#define   W697HF_INDEX_PORT             (W697HF_BASE)
#define   W697HF_DATA_PORT              (W697HF_BASE+1)
//============================================================================
#define   W697HF_REG_LD                         0x07
//============================================================================
#define W697HF_UNLOCK                   0x87
#define   W697HF_LOCK                           0xAA
//============================================================================
unsigned int Init_W697HF(void);
void Set_W697HF_LD( unsigned char);
void Set_W697HF_Reg( unsigned char, unsigned char);
unsigned char Get_W697HF_Reg( unsigned char);
//============================================================================
#endif    //__W697HF_H
```

D. Digital I/O Sample Code

Filename：Main.cpp

```
//---------------------------------------------------------------------------
//
// THIS CODE AND INFORMATION IS PROVIDED "AS IS" WITHOUT WARRANTY OF ANY
// KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE
// IMPLIED WARRANTIES OF MERCHANTABILITY AND/OR FITNESS FOR A PARTICULAR
// PURPOSE.
//
//---------------------------------------------------------------------------
#include <dos.h>
#include <conio.h>
#include <stdio.h>
#include <stdlib.h>
#include "W697HF.H"
//---------------------------------------------------------------------------
void ClrKbBuf(void);
int main (int argc, char *argv[]);
void SetDioInupt(unsigned char);
unsigned char GetDioOutpt(void);

//---------------------------------------------------------------------------
int main (int argc, char *argv[])
{
        if (Init_W697HF() == 0)
        {
                printf("Can not detect Winbond 83697HF, program abort.\n");
                return(1);
        }

        printf("Current DIO input is 0x%X\n|, GetDioOutpt());

        printf("Set DIO output to high\n");
        SetDioInupt(0x0F);

        printf("Set DIO output to low\n");
        SetDioInupt(0x00);

        return 0;
}
//---------------------------------------------------------------------------
void SetDioInupt(unsigned char data)
{
        Set_W697HF_LD( 0x07);                                   //switch to logic device 7
        Set_W697HF_Reg(0xF1, ((data & 0x0F) << 4));
}
//---------------------------------------------------------------------------
unsigned char GetDioOutpt(void)
{
        unsigned char result;

        Set_W697HF_LD( 0x07);                                   //switch to logic device 7
        result = Get_W697HF_Reg(0xF1, (data & 0x0F));
        return (result);
}
//---------------------------------------------------------------------------
void ClrKbBuf(void)
{
        while(kbhit())
        {       getch();    }
}
//---------------------------------------------------------------------------
```

Filename：W697hf.cpp

```
//===========================================================================
//
// THIS CODE AND INFORMATION IS PROVIDED "AS IS" WITHOUT WARRANTY OF ANY
// KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE
```

```
// IMPLIED WARRANTIES OF MERCHANTABILITY AND/OR FITNESS FOR A PARTICULAR
// PURPOSE.
//
//=============================================================================
#include "W697HF.H"
#include <dos.h>
//=============================================================================
unsigned int W697HF_BASE;
void Unlock_W697HF (void);
void Lock_W697HF (void);
//=============================================================================
unsigned int Init_W697HF(void)
{
        unsigned int result;

        W697HF_BASE = 0x2E;
        result = W697HF_BASE;
        if (Get_W697HF_Reg(0x20) == 0x60)
        {       goto Init_Finish;     }

        W697HF_BASE = 0x4E;
        result = W697HF_BASE;
        if (Get_W697HF_Reg(0x20) == 0x60)
        {       goto Init_Finish;     }

        W697HF_BASE = 0x00;
        result = W697HF_BASE;

Init_Finish:
        return (result);
}
//=============================================================================
void Unlock_W697HF (void)
{
        outportb(W697HF_INDEX_PORT, W697HF_UNLOCK);
        outportb(W697HF_INDEX_PORT, W697HF_UNLOCK);
}
//=============================================================================
void Lock_W697HF (void)
{
        outportb(W697HF_INDEX_PORT, W697HF_LOCK);
}
//=============================================================================
void Set_W697HF_LD( unsigned char LD)
{
        Unlock_W697HF();
        outportb(W697HF_INDEX_PORT, W697HF_REG_LD);
        outportb(W697HF_DATA_PORT, LD);
        Lock_W697HF();
}
//=============================================================================
void Set_W697HF_Reg( unsigned char REG, unsigned char DATA)
{
        Unlock_W697HF();
        outportb(W697HF_INDEX_PORT, REG);
        outportb(W697HF_DATA_PORT, DATA);
        Lock_W697HF();
}
//=============================================================================
unsigned char Get_W697HF_Reg(unsigned char REG)
{
        unsigned char Result;
        Unlock_W697HF();
        outportb(W697HF_INDEX_PORT, REG);
        Result = inportb(W697HF_DATA_PORT);
        Lock_W697HF();
        return Result;
}
//=============================================================================
Filename：W697hf.h
//=============================================================================
```

```
//
// THIS CODE AND INFORMATION IS PROVIDED "AS IS" WITHOUT WARRANTY OF ANY
// KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE
// IMPLIED WARRANTIES OF MERCHANTABILITY AND/OR FITNESS FOR A PARTICULAR
// PURPOSE.
//
//====================================================================
#ifndef __W697HF_H
#define __W697HF_H                      1
//====================================================================
#define   W697HF_INDEX_PORT             (W697HF_BASE)
#define   W697HF_DATA_PORT              (W697HF_BASE+1)
//====================================================================
#define   W697HF_REG_LD                         0x07
//====================================================================
#define W697HF_UNLOCK                   0x87
#define   W697HF_LOCK                           0xAA
//====================================================================
unsigned int Init_W697HF(void);
void Set_W697HF_LD( unsigned char);
void Set_W697HF_Reg( unsigned char, unsigned char);
unsigned char Get_W697HF_Reg( unsigned char);
//====================================================================
#endif    //__W697HF_H
```